

## CLAIMS:

1. A remote control system for a locomotive, comprising:
  - (a) a remote control device for receiving a command signal conveying an action  
5 to be executed by the locomotive;
  - (b) an identification interface located remotely from said remote control device,  
said identification interface being adapted for receiving user identification  
data by a user of the remote control device;
  - (c) a locomotive controller module suitable for mounting at the locomotive, said  
10 locomotive controller module being adapted for generating local control  
signals;
  - (d) when the user identification data belongs to an authorized user, said  
locomotive controller module being operative to issue a local control signal  
for causing the locomotive to execute the action conveyed by the command  
15 signal received at the remote control device.
2. A remote control system as defined in claim 1, wherein said identification  
interface is suitable for being located at the locomotive.
- 20 3. A remote control system as defined in claim 1, wherein said identification  
interface is connected to said locomotive controller module.
4. A remote control system as defined in claim 1, wherein said identification  
interface is an integral part of said locomotive controller module.
- 25 5. A remote control system as defined in claim 1, wherein said identification  
interface is located remotely from said remote control device and said locomotive  
controller module.
- 30 6. A remote control system as defined in claim 1, wherein said system further  
includes a user authentication unit in communication with said identification  
interface, said user authentication unit being adapted for:

- (a) receiving the user identification data from said identification interface; and
- (b) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user.

5

7. A remote control system as defined in claim 6, wherein said user authentication unit is in communication with said remote control device, said remote control device being operative for transmitting a signal conveying the command data to the locomotive controller module when the user authentication unit determines  
10 that the user identification data belongs to an authorized user.

15

8. A remote control system as defined in claim 5, wherein said remote control system is adapted for storing data relating to command signals entered at said remote control device by the authorized user.

20

9. A remote control system as defined in claim 1, wherein said user identification data includes a biometrics parameter.

10. A remote control system as defined in claim 9, wherein said biometrics parameter  
20 is selected from the set consisting of fingerprint data, retinal scan data, voice recognition data, DNA data and body part shape/pattern data.

25

11. A remote control system as defined in claim 1, wherein said user identification data includes user-supplied information.

12. A remote control system as defined in claim 11, wherein said identification interface includes either one of a keypad and touch sensitive screen for entering  
said user-supplied information.

30

13. A remote control system as defined in claim 11, wherein said user-supplied information is stored on a computer readable storage medium, said identification

interface including an input adapted for reading said computer readable storage medium for extracting said user-supplied information.

14. A remote control device for controlling a locomotive, said remote control device  
5 comprising:
- (a) a first input for receiving a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;
  - (b) a second input distinct from said first input, said second input being adapted for receiving user identification data;
  - 10 (c) a processing unit operative to transmit a control signal indicative of a command to be executed by the locomotive when the user identification data belongs to an authorized user.

15. A remote control device as defined in claim 14, further comprising a user  
15 authentication unit that is in communication with said second input, said user authentication unit being adapted for:
- (a) receiving the user identification data; and
  - (b) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized  
20 user.

16. A remote control device as defined in claim 14, wherein said remote control device is adapted for storing data relating to command signals entered at said first input.

25

17. A remote control device as defined in claim 14, wherein said user identification data includes a biometrics parameter.

18. A remote control device as defined in claim 17, wherein said biometrics parameter  
30 is selected from the set consisting of fingerprint data, retinal scan data, voice recognition data, DNA data and body part shape/pattern data.

19. A remote control device as defined in claim 14, wherein said user identification data includes user-supplied information.
20. A remote control device as defined in claim 19, wherein said second input  
5 includes either one of a keypad and touch sensitive screen for entering said user-supplied information.
21. A remote control device as defined in claim 19, wherein said user-supplied information is stored on a computer readable storage medium, said second input  
10 being adapted for reading said computer readable storage medium for extracting said user-supplied information.
22. A remote control system for a locomotive, said remote control system comprising:
- (a) a remote control device including:
- 15 (1) a first input for receiving an input command signal from a user, the input command signal being indicative of a command to be executed by the locomotive;
- (2) a second input distinct from said first input, said second input being adapted for receiving user identification data;
- 20 (b) a user authentication unit in communication with said remote control device, said user authentication unit being adapted for:
- (1) receiving the user identification data from said remote control device; and
- (2) processing the user identification data to generate verification data  
25 indicative of whether the user identification data belongs to an authorized user;
- (c) a locomotive controller module suitable for mounting at the locomotive, said locomotive controller module being adapted for generating local control signals on the basis of command signals originating from said remote control  
30 device;
- (d) when the verification data indicates that the user identification data belongs to an authorized user, said locomotive controller module being operative to

issue a local control signal for causing the locomotive to execute the command conveyed by the command signal received at the first input of the remote control device.

5     23. A remote control system as defined in claim 22, wherein said user authentication unit is part of said remote control device.

24. A remote control system as defined in claim 22, wherein said user authentication unit is part of said locomotive controller module.

10

25. A method for controlling a locomotive, said method comprising:

- (a) receiving at a first input a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;
- (b) receiving at a second input distinct from said first input user identification data, the second input being dedicated for receiving the user identification data;
- 15     (c) transmitting a control signal indicative of the command to be executed by the locomotive when the user identification data belongs to an authorized user.

20

26. A remote control device for controlling a locomotive, said remote control device comprising:

- (a) a first input for receiving a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;
- 25     (b) a second input operative to receive user identification data from a machine readable storage medium;
- (c) a user authentication unit operative for processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
- 30     (d) a processing unit operative for transmitting a control signal indicative of the command to be executed by the locomotive when the verification data indicates that the user identification data belongs to an authorized user.

27. A remote control device as defined in claim 26, wherein said second input is selected from the list consisting of a smart card reader, a magnetic strip reader, a diskette reader, a CD ROM.

5 28. A remote control system for a locomotive, said remote control system comprising:  
(a) a remote control device including:

- (1) a first input for receiving a command signal from a user, the command signal being indicative of an action to be executed by the locomotive;
- (2) a second input operative to receive user identification data from a  
10 machine readable storage medium;

(b) a user authentication unit in communication with said remote control device, said user authentication unit being adapted for:

- (1) receiving the user identification data from said remote control device;  
and
- 15 (2) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;

(c) a locomotive controller module suitable for mounting at the locomotive, said locomotive controller module being adapted for generating local control  
20 signals on the basis of command signals originating from said remote control device;

(d) when the verification data indicates that the user identification data belongs to an authorized user, said locomotive controller module being operative to issue a local control signal for causing the locomotive to execute the action  
25 conveyed by the command signal received at the first input of the remote control device.

29. A remote control device for controlling a locomotive, said remote control device comprising:

- 30 (a) a first input for receiving a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;

- (b) a second input operative to receive user identification data indicative of a fingerprint;
  - (c) a user authentication unit operative for processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
  - (d) a processing unit operative for transmitting a control signal indicative of the command to be executed by the locomotive when the verification data indicates that the user identification data belongs to an authorized user.
- 10 30. A remote control system for a locomotive, said remote control system comprising:
- (a) a remote control device including:
    - (1) a first input for receiving a command signal from a user, the command signal being indicative of an action to be executed by the locomotive;
    - (2) a second input operative to receive user identification data indicative of a fingerprint;
  - (b) a user authentication unit in communication with said remote control device, said user authentication unit being adapted for:
    - (1) receiving the user identification data from said remote control device; and
    - (2) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
  - (c) a locomotive controller module suitable for mounting at the locomotive, said locomotive controller module being adapted for generating local control signals on the basis of command signals originating from said remote control device;
  - (d) when the verification data indicates that the user identification data belongs to an authorized user, said locomotive controller module being operative to issue a local control signal for causing the locomotive to execute the action conveyed by the command signal received at the first input of the remote control device.

31. A remote control device for controlling a locomotive, said remote control device comprising:

- (a) a first input for receiving a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;
- 5 (b) a second input operative to receive user identification data via a keypad;
- (c) a user authentication unit operative for processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
- 10 (d) a processing unit operative for transmitting a control signal indicative of the command to be executed by the locomotive when the verification data indicates that the user identification data belongs to an authorized user.

32. A remote control system for a locomotive, said remote control system comprising:

- (a) a remote control device including:
  - 15 (1) a first input for receiving a command signal from a user, the command signal being indicative of an action to be executed by the locomotive;
  - (2) a second input operative to receive user identification data via a keypad;
- (b) a user authentication unit in communication with said remote control device,
  - 20 said user authentication unit being adapted for:
    - (1) receiving the user identification data from said remote control device; and
    - (2) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
- 25 (c) a locomotive controller module suitable for mounting at the locomotive, said locomotive controller module being adapted for generating local control signals on the basis of command signals originating from said remote control device;
- 30 (d) when the verification data indicates that the user identification data belongs to an authorized user, said locomotive controller module being operative to issue a local control signal for causing the locomotive to execute the action



conveyed by the command signal received at the first input of the remote control device.

33. A remote control device for controlling a locomotive, said remote control device comprising:
- 5 (a) a first input for receiving a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;
  - (b) a second input operative to receive user identification data via a retina scanner;
  - 10 (c) a user authentication unit operative for processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
  - (d) a processing unit operative for transmitting a control signal indicative of the command to be executed by the locomotive when the verification data
  - 15 indicates that the user identification data belongs to an authorized user.
34. A remote control system for a locomotive, said remote control system comprising:
- (a) a remote control device including:
    - 20 (1) a first input for receiving a command signal from a user, the command signal being indicative of an action to be executed by the locomotive;
    - (2) a second input operative to receive user identification data via a retina scanner;
  - (b) a user authentication unit in communication with said remote control device, said user authentication unit being adapted for:
    - 25 (1) receiving the user identification data from said remote control device; and
    - (2) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
  - 30 (c) a locomotive controller module suitable for mounting at the locomotive, said locomotive controller module being adapted for generating local control

signals on the basis of command signals originating from said remote control device;

- 5 (d) when the verification data indicates that the user identification data belongs to an authorized user, said locomotive controller module being operative to issue a local control signal for causing the locomotive to execute the action conveyed by the command signal received at the first input of the remote control device.

10 35. A remote control device for controlling a locomotive, said remote control device comprising:

- (a) a first input for receiving a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;
- (b) a second input operative to receive user identification data indicative of DNA information;
- 15 (c) a user authentication device operative for processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
- (d) a processing unit operative for transmitting a control signal indicative of the command to be executed by the locomotive when the verification data
- 20 indicates that the user identification data belongs to an authorized user.

36. A remote control system for a locomotive, said remote control system comprising:

- (a) a remote control device including:
- 25 (1) a first input for receiving a command signal from a user, the command signal being indicative of an action to be executed by the locomotive;
- (2) a second input operative to receive user identification data indicative of DNA information;
- (b) a user authentication unit in communication with said remote control device, said user authentication unit being adapted for:
- 30 (1) receiving the user identification data from said remote control device; and

- (2) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
  - (c) a locomotive controller module suitable for mounting at the locomotive, said locomotive controller module being adapted for generating local control signals on the basis of command signals originating from said remote control device;
  - (d) when the verification data indicates that the user identification data belongs to an authorized user, said locomotive controller module being operative to issue a local control signal for causing the locomotive to execute the action conveyed by the command signal received at the first input of the remote control device.
37. A remote control device for controlling a locomotive, said remote control device comprising:
- (a) a first input for receiving a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;
  - (b) a second input operative to receive user identification data;
  - (c) said remote control device being adapted to issue a prompt for indicating to a user to provide user identification data;
  - (d) a processing unit operative to transmit a control signal indicative of a command to be executed by the locomotive when the user identification data belongs to an authorized user.
38. A remote control device as defined in claim 37, wherein said prompt is an audio prompt.
39. A remote control device as defined in claim 37, wherein said prompt is a visual prompt.
40. A remote control device as defined in claim 39, wherein said visual prompt is a flashing light.

41. A remote control device as defined in claim 39, wherein said visual prompt is a text message displayed to the user.

5 42. A remote control system for a locomotive, said remote control system comprising:

(a) a remote control device including:

- (1) a first input for receiving a command signal from a user, the command signal being indicative of an action to be executed by the locomotive;
- (2) a second input operative to receive user identification data, said remote control system being operative to prompt the user to input the user identification data;

(b) a user authentication unit in communication with said remote control device, said user authentication unit being adapted for:

- (1) receiving the user identification data from said remote control device; and
- (2) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;

(c) a locomotive controller module suitable for mounting at the locomotive, said locomotive controller module being adapted for generating local control signals on the basis of command signals originating from said remote control device;

(d) when the verification data indicates that the user identification data belongs to an authorized user, said locomotive controller module being operative to issue a local control signal for causing the locomotive to execute the action conveyed by the command signal received at the first input of the remote control device.

43. A remote control device for controlling a locomotive, said remote control device comprising:

- (a) a first input for receiving a command signal from a user, the command signal being indicative of a command to be executed by the locomotive;

- (b) a second input operative to receive user identification data;
  - (c) an authentication unit operative for processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;
  - 5 (d) a processing unit operative to:
    - (1) transmit a control signal indicative of a command to be executed by the locomotive when the user authentication unit confirms that the user identification data belongs to an authorized user;
    - in response to a transmission termination event, said processing unit being
    - 10 adapted to cease the transmission of control signals indicative of commands to be executed by the locomotive .
44. A remote control device as defined in claim 43, wherein said transmission termination event includes a termination signal.
- 15 45. A remote control device as defined in claim 44, wherein said remote control device includes an input for enabling a user to enter the termination signal.
- 20 46. A remote control device as defined in claim 43, wherein said transmission termination event is the expiration of a time delay commencing upon receipt of a signal indicative of user identification data at said second input of said remote control device, wherein the user identification data is associated to an authorized user.
- 25 47. A remote control device as defined in claim 46, wherein said time delay is a pre-determined period of time.
- 30 48. A remote control device as defined in claim 43, wherein said transmission termination event is the expiration of a time delay during which no signal indicative of a command to be executed by the locomotive is received at said first input of said remote control device.

49. A remote control device as defined in claim 43, wherein, said processing unit is operative for resuming the transmission of control signals when new user identification data received at said second input subsequent to receipt of a transmission termination event, belongs to an authorized user.

5

50. A remote control system for a locomotive, said remote control system comprising:

(a) a remote control device including:

(1) a first input for receiving a command signal from a user, the command signal being indicative of an action to be executed by the locomotive;

10 (2) a second input operative to receive user identification data;

(b) a user authentication unit in communication with said remote control device, said user authentication unit being adapted for:

(1) receiving the user identification data from said remote control device; and

15 (2) processing the user identification data to generate verification data indicative of whether the user identification data belongs to an authorized user;

(c) a locomotive controller module suitable for mounting at the locomotive, said locomotive controller module being operative for:

20 (1) generating local control signals on the basis of command signals originating from said remote control device;

(2) issuing a local control signal for causing the locomotive to execute the action conveyed by the command signal received at the first input of the remote control device, when the verification data indicates that the user identification data belongs to an authorized user,

25

(d) in response to a transmission termination event, said locomotive controller module being adapted to cease the transmission of local control signals .

51. A system as defined in claim 50, wherein said transmission termination event includes a termination signal.

30

52. A system as defined in claim 51, wherein said system includes an input for enabling a user to enter the termination signal.
53. A system as defined in claim 50, wherein said transmission termination event is  
5 the expiration of a time delay commencing upon receipt of a signal indicative of user identification data at said second input of said remote control device, wherein the user identification data is associated to an authorized user.
54. A system as defined in claim 53, wherein said time delay is a pre-determined  
10 period of time.
55. A system as defined in claim 50, wherein said transmission termination event is  
the expiration of a time delay during which no signal indicative of a command to  
be executed by the locomotive is received at said first input of said remote control  
15 device.
56. A system as defined in claim 50, wherein said locomotive controller module is  
adapted for resuming the transmission of local control signals when new user  
identification data received at the second input of said remote control device  
20 belongs to an authorized user.